116, 278, 387, 433

"With the exception of paper, mineral oil and soap, all the products mentioned here represent the processing of agricultural products or else fertilizers for agriculture. The alcohol is chiefly a by-product of the sugar industry. Formerly all alcohol produced in Taiwan came from molasses, but now part of it is produced directly from sugar cane. The new product—[104]absolute alcohol—is suitable for use as a motor fuel, but no data on its production have been published.

In 1937 the products of this industry were as follows:

	Value (1,000 yen)	Volume (tons)
Mineral oil	1,094	
Soap	941	
Vegetable oils	2,149	3,721 (1936)
Oil cakes	2,382	
Paper	2,165	
Bagasse*	626	
Mixed fertilizers	7,450	67,841 (1936)
Other fertilizers	1,808	
Perfumery and essences	1,211	
Charcoal	1,970	

* Cake for fodder made of the remains from sugar

cane after extraction of the sugar.

	Value (1,000 yen)	Volume (tons)
Refined camphor	1,346	
Alcohol	5,434	
Other products	5,076	
Total	33,652"	

4:Grajdanzev--104 S-4 (no date) 1942 Formosans
116, 371, 387, 439

"Taiwan is a heavy importer of fertilizers, because its domestic industry supplies a very small part of its needs. In 1936, for example, of 147,600 tons of sulphate of ammonia consumed, only 13,059 tons were produced in Taiwan. But this offers a promising field for development because Taiwan is rich in cheap water power (1).

1. In 1937 two large Japanese companies organized Taiwan Kagaku Kogyo Kaisha (Taiwan Chemical Co.) with a capital of ¥10 million, for the production of sulphate of ammonia. It was planned to increase production in the future to 100,000 tons of sulphate of ammonia; but data on the progress of the company are not available and, judging by the imports, production has not advanced to plan. The plant of the company was to be near Sinchiku."

423 and owned by each farming family in Formosa
24/ is 1.28 chia or 2.8 acres as compared with 215.3 acres owned by each farming family in the United States.[27] The small size of the farms limits the living standard and the purchasing power of Formosan farmers. Even the small parcel of land owned by the average farmer is threatened with further partition on account of the enormous rate of natural increase in population. The average size of farms on Formosa has decreased from nearly 2 chia (.5 acres) in 1937 to the present 1.3 chia. Unless industrialization of the island can divert members of the growing farming families to industrial enterprises, the size of farmland per family will be further reduced through inheritance and will become too small to maintain even a marginal subsistence. It will be indeed a serious situation. Furthermore, for lack of capital, and relying principally on human labor, the efficiency of Formosan farming is low, and the cost of production is
387 high. The soil of the western coastal plain is
24/ alluvial, lacking sufficient humus to be fertile. Fertilizer is needed to increase its productivity.[28]

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27. Report of United States Bureau of the Census for 1950.

28. The application of fertilizer to riceland in Formosa averages 50 pounds per acre per crop, whereas in Japan, the figure is 66 to 98 pounds.

387 241 The Chinese Nationalist Government with American aid has made special effort to expand the production of fertilizer in the past five years[29] and make it available to the farmer through the Land Bank of Taiwan and the farmers' associations. The Kaohsiung Ammonium Sulfate Corporation reduced the selling price of fertilizer, from NT$3,100 to NT$2,800 per metric ton in June 1954 and then to NT$2,200 in August 1954. But the present production still falls short of the estimated annual requirement of 740,000 metric tons.[30]

241 407 At present, farm mechanization is in its infancy. Little power is employed in agricultural production. Farm implements are crude and clumsy; they do not plow deeply and evenly, and so the distribution and the depth of the seeds sown are not uniform. The Sino-American Joint Commission on Rural Reconstruction is sponsoring many projects to

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29. Production was increased from 45,840 metric tons in 1949 to 168,491 metric tons in 1954.

30. The amount of fertilizer actually used in 1952 was 535,801 metric tons-- (732,600 short tons), JCRR General Report IV, Taipei, 1953, p. 55.

45:Stanford U. S-4, 5 1956 AD 1 Formosa
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V. CHEMICAL INDUSTRIES

A. Fertilizers

387 433 The importance of fertilizer for Formosa lies in the fact that so little of the island is suitable for agriculture that what arable land there is must be constantly enriched by chemical and natural means. The fertilizer industry is expanding, and in the next decades will offer employment to many and decrease the amount of fertilizer it is necessary to import to Formosa.

Experts attached to the Joint Commission on Rural Reconstruction have estimated that, according to Formosa's present soil and climatic conditions, the island has need of a minimum of 580,000 metric tons of chemical fertilizers each year. In order to secure optimum growth of crops, 1,000,000 metric tons of chemical fertilizers are needed annually. However, as of early 1955, the productive capacity of domestic plants was approximately 185,700 metric tons per year.[20] In order to expand production of fertilizers, the construction of four additional plants has begun, and when they are completed they will increase total capacity to over 383,000 metric tons per year. Further expansion is feasible, provided that sufficient investment capital is made available. Most of the

20. Industrial Development Commission, Fertilizer Taiwan, Taipei, 1955, pp. 4-6.

387 raw materials necessary for the processing of
433 fertilizer are available on Formosa. The island has a relative abundance of limestone, coke, coal, pyrite, and serpentine; phosphate must be imported. However, the present expansion program will only provide two-thirds of the minimum fertilizer
387 requirement of the island. The following table
433 compares the production and importation of chemi-
439 cal fertilizers.

PRODUCTION AND IMPORT OF CHEMICAL FERTILIZERS */

	Production	Importation
1937	31	413
1938	27	444
1939	34	356
1951	112	235
1952	150	403
1953	166	253
1954	168	359

*/ Industry of Free China, Vol. 2, November 1954, pp. 90-91, and Vol. 3, May 1955, pp. 56,70.

of 303,400 metric tons) and that of industrial salt to 67,000 metric tons (as compared to peak production of 465,000 metric tons). The production of chemical fertilizer (33,800 metric tons before the war) had come to a halt. Tea processing plants and pineapple packing plants stood deserted. In short, by V-J Day the ravages of war, materials shortages, and lack of maintenance had almost paralyzed the industry of Taiwan. The railroads had worn out no less than 1400 steel bridges which had to be classified as unsafe to use.

After V-J Day, rehabilitation work on the railroads was given a high priority. Eroded steel bridge spans were removed, worn-out sleepers and rails were replaced, road beds were reconditioned. Today, passenger traffic exceeds the peak load of the prewar period; freight traffic, after tripling itself in one year, is approaching prewar peak.

Rehabilitation of the power system made great demands on the ingenuity of the available Chinese engineers. Little foreign exchange was available with which to buy needed replacements, so that the repairs had to be accomplished by reworking obsolete and broken equipment scattered about over the island. Through tedious patching and repairing operations, and the acquisition of a few spare parts that could not be improved, they tripled generating capacity in two years. By 1951, capacity had reached an all time high of 217,000 KW. Today coal (1,451,000 metric tons in 1952), cement (389,000 tons in 1951), chemical fertilizers (more than three times prewar production), petroleum, cotton yarn (three times Japanese peak production) and cotton piece goods (four times Japanese peak production) have all surpassed prewar production figures.

The sugar industry, which, as in the past, is Taiwan's most important source of foreign exchange, has done less well by comparison with prewar standards, but not, or at least not primarily, because rehabilitation operations failed to be carried out. In 1945, 27 of 36 plants stood seriously damaged. By 1948, all the factories and plantation railways had been completely rehabilitated, and by 1950 sugar production had climbed back to 630,000 metric tons. The Taiwan Sugar Corporation's capacity is now over one million tons a year. In 1949–50, however, sugar dropped in price on the world market, and farmers turned from sugar to rice. In 1951–52, the world market price began to rise, and sugar production is gradually returning to its previous high levels.

Paper and pulp mills, machinery shops, shipbuilding, and aluminum works have, likewise, been gradually restored. Another worthwhile project has been the development of a fishery industry which has improved the Taiwanese diet (including that of the Nationalist Army) without great expenditures. American economic aid has played an important role in the rehabilitation and development of all these industries.

A labor insurance policy was put into effect on 1 March 1950. Its object is described as "safeguarding the livelihood of the workers and promoting harmonious relations between labor and management so as to ensure social security and high production." According to the Labor Insurance Regulations, all workers employed in public and private factories, mines, salt fields, communications, and public utilities in Taiwan shall be insured. It is compulsory labor insurance on a limited scale. The benefits are insurance against injury, death, maternity, disability, and old age. It also has provision for free medical clinics. This new system of social insurance was put into effect with the cooperation of the Chinese Federation of Labor, the Free China Labor League, and the Provincial General Labor Union. Their delegates also sit as members of the legislature of the provincial government.

The government has also carried out a tax reform and overhauled the tax collection system. The reform program went into effect on 1 January 1951. The number of distinct taxes was reduced from 20 to 11, leaving the income, inheritance, stamp, commodity, land, business, slaughter-house, entertainment and amusement, vehicle license, and household taxes.

52:Steiner S-4 (no date) 1951
AF1 China
FORMOSA ADI

433 figure for rice acreage registers an increase of 156 per cent over 1945, while the rice yield shows an increase of 221 per cent. There are also gains in sweet potatoes, wheat, sugar cane, tea, fruits, and other agricultural produce. Among the factors contributing to this growth are the fertilizer assistance program under ECA, incentive generated by the rent reduction program, irrigation and reclamation projects, and rural co-operative projects, health work, and improved-seed distribution sponsored by the Chinese-American Joint Committee of Rural Rehabilitation.[84]

Industry

439 The Nationalist policies toward industry may be reflected by a general description of the industrial situation in Taiwan. Prior to 1945, the island was tied to Japanese over-all economy. Its agricultural productivity, for instance, was dependent on fertilizer imports from Japan. Other products, such as camphor and certain metal-bearing ores, were shipped to Japan for further processing. In recent years there has been a trend toward integration of industries. 387 The production of fertilizer, for example, has been stepped up from a 1945 low of 400 metric tons to an estimated 92,000 tons in 1951.[85] This is against an estimated 1951 demand of 340,000 metric tons in rice and sugar-cane fields alone.[86] Since March 1948, a refining 000

ernment, *Report on Food Production** (Taipeh, 1949), pp. 33–41; *Taiwan Reconstruction**, cited note 12 *supra*, Vol. 2, pp. 383–402; *Taiwan Today*, cited note 11 *supra*, pp. 77–98.

[84] Raymond T. Moyer, "Economic Administration Program in Taiwan," address before the Chinese Association for the United Nations, March 17, 1951.

[85] *Taiwan Today*, cited note 11 *supra*, p. 108; *Taiwan Reconstruction**, cited note 12 *supra*, Vol. 2, p. 481 (1950 production was estimated to be 55,000 metric tons).

[86] *Taiwan Today*, p. 107; also cf. *Taiwan*

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